

## **Remarks**

This reply is responsive to the office action dated July 13, 2004.

Claims 1 - 4 have been generally amended to more distinctly claim the invention. Upon entry of this amendment claims 1-4 are pending. No new matter has been added, and the present application is believed to be in condition for allowance.

As an initial matter, applicants have attached herewith translated copies of the two references (JP 11-347250 and JP 2002-253848) relied upon by the examiner as grounds for rejecting claims 1-4 in the non-final office action dated July 13, 2004. These references were originally cited by applicants in an Information Disclosure Statement mailed to the Patent Office on May 12, 2004. At that time, English abstracts of the references were provided to the Patent Office in accordance with 37 C.F.R. §§ 1.97 and 1.98. The attached translations were recently obtained from the Japanese Patent Office web site, and appear to be "machine" translations of the Japanese references. Applicants became aware of these translations while preparing the response to the July 13, 2004 office action.

In the official action, the examiner:

- objected to claim 1 as being informal;
- rejected claims 1-4 under 35 U.S.C. §103(a) as being unpatentable over Japanese reference JP11-347250 to Akihiro ("the Akihiro reference") in view of Japanese reference JP 2002-253848 to Kazuhiko ("the Kazuhiko reference").

## **Objections**

The examiner objected to claims 1 and 4 as being informal. Specifically, in both claims, the limitation "a distance" should be corrected to read "the distance;" also, the limitation "outputting from sound output means" should be corrected to read "outputting the predetermined sound from sound output means;" further the limitation "invisible item" should be corrected to read "the invisible item."

Claims 1 and 4 have been amended to incorporate the examiner's suggestions. Thus, the applicant requests that these objections be withdrawn and that the claims be allowed.

## **Rejections**

### **35 U.S.C. §103(a)**

The examiner rejected claims 1-4 under 35 U.S.C. §103(a) as being unpatentable over the Akihiro reference in view of the Kazuhiko reference.

Claim 1 has been amended to recite, *inter alia*,

“... a process for removing said invisible item from said position for obtaining when instructed to obtain said item by said controller in such a state that said distance computed with said process for computing item distance becomes a predetermined value or lower;

a process for stopping output of said predetermined sound from said sound output means when instructed to obtain said item by said controller ....”

Claim 4 has been amended to recite, *inter alia*,

“... means for removing said invisible item from said position for obtaining when instructed to obtain said item by said controller in such a state that a distance computed with said means for computing item distance becomes a predetermined value or lower;

means for stopping output of said predetermined sound from said sound output means when instructed to obtain said item by said controller ...”

Neither the Akihiro reference nor the Kazuhiko reference, alone or in combination, disclose, teach or suggest a process or means for “removing [an] invisible item from [a] position for obtaining when instructed to obtain said item ...,” nor a process or means for “stopping output of ... sound ... from [a] sound output means when instructed to obtain said item by said controller.” Rather, as noted by the examiner, the

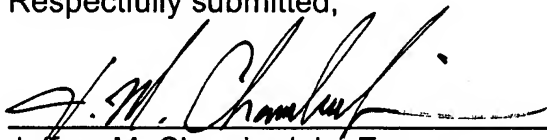
Akihiro reference discloses producing and outputting a predetermined sound based on the calculated distance. (See Detailed Action, page 3, lines 4-5). Akihiro does not disclose, teach or suggest stopping sound output when an invisible item is obtained. The Kazuhiko reference does not remedy this deficiency, but rather discloses updating a player character image to show a face of the character turned to an object. (See Kazuhiko reference, Solution section, lines 7-13). Neither reference discloses signaling the obtaining of an invisible item by stopping the output of sound from the game.

Thus, neither the Akihiro reference nor the Kazuhiko reference, alone or in combination, disclose, teach or suggest every limitation of claims 1 and 4. Applicant therefore requests that the 35 U.S.C. § 103(a) rejection of these claims be withdrawn and that claims 1 and 4 be allowed. With respect to claims 2 and 3, which depend from claim 1 and recite additional features of the invention, applicant requests that these claims be allowed for the same reasons as indicated for claim 1.

Every effort has been made to present the subject matter of the application in proper form, to particularly and distinctly define the subject matter regarded as the invention and to demonstrate that the subject matter claimed as a whole is properly patentable over the prior art. The claims as amended are believed to be in condition for allowance. Reconsideration and allowance are requested.

Respectfully submitted,

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**(54) VIDEO GAME DEVICE AND CONTROL METHOD THEREOF, PROGRAM FOR VIDEO GAME, AND COMPUTER-READABLE RECORDING MEDIUM WITH THE PROGRAM RECORDED THEREIN**

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a video game allowing a player to easily find an object not displayed on a screen.

SOLUTION: A play character 200 displayed on the screen 61 is moved in the direction of an arrow 202, and the image of the player character 200 has a body turned according to the moving direction. This video game device periodically examines whether a detectable object is present within a prescribed distance from the player character 200 displayed on the screen 61 or not. When the presence of the detectable object 210 is judged, the image of the player character 200 is updated to an image where the face is turned to the object 210. It is only the face of the player character 200 that is turned to the object 210, and the body has the direction according to the moving direction.

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### LEGAL STATUS

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decision of rejection]

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## CLAIMS

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### [Claim(s)]

[Claim 1] It is the record medium which recorded the program of the possible video game of a player operating the character of the virtual world displayed on an indicating equipment and in which computer read is possible. When the program of said video game is read by the computer, If it judges whether a detectable predetermined object exists within the predetermined maximum detection distance from said character and it is judged that said detectable object exists within the maximum detection distance from said character The record medium which makes said computer perform what said character is updated for in the image which turns to said detectable direction of an object.

[Claim 2] It is a record medium containing what is updated in the image which turns to the detectable direction of an object which specified the near detectable object of distance most from said character among said detectable objects, and was specified in said character when it is judged that said two or more detectable objects exist within the maximum detection distance from said character according to claim 1 to update said character.

[Claim 3] It is a record medium containing what said character is updated for in the image which turns to said detectable direction of an object when it judges whether the object which interrupts a look between the detectable object judged to exist within the maximum detection distance from said character and said character is arranged and it is judged that the object which interrupts a look is not arranged according to claim 1 to update said character.

[Claim 4] Said detectable object is arranged in the predetermined location in said virtual world. It not being displayed on a screen, but the possible hiding item of discovering, when a player makes said character investigate the location being included, and updating said character If it is judged that said detectable object exists within the maximum detection distance from said character while said character masters predetermined capacity or the predetermined item is used A record medium including updating said character in the image which turns to said direction of a hidden item according to claim 1.

[Claim 5] The candidate for updating of said character is the record medium of any one publication of claim 1-4 characterized by being a face part at least.

[Claim 6] It is a record medium including making into said character actuation beforehand defined according to the distance of said detectable object and said character according to claim 1 to update said character, when it is judged that said detectable object exists within the maximum detection distance from said character.

[Claim 7] It is a record medium including making into said character actuation beforehand defined according to the class of said detectable object according to claim 1 to update said character, when it is judged that said detectable object exists within the maximum detection

distance from said character.

[Claim 8] It is the program of the possible video game of a player operating the character of the virtual world displayed on an indicating equipment. When read by the computer, it judges whether a detectable predetermined object exists within the predetermined maximum detection distance from said character. The video game program which makes said computer perform what said character will be updated for in the image which turns to said detectable direction of an object if it is judged that said detectable object exists within the maximum detection distance from said character.

[Claim 9] When it is judged that said two or more detectable objects exist within the maximum detection distance from said character, updating said character The video game program containing what is updated in the image which turns to the detectable direction of an object which specified the near detectable object of distance most from said character among said detectable objects, and was specified in said character according to claim 8.

[Claim 10] It is a video game program containing what said character is updated for in the image which turns to said detectable direction of an object when it judges whether the object which interrupts a look between the detectable object judged to exist within the maximum detection distance from said character and said character is arranged and it is judged that the object which interrupts a look is not arranged according to claim 8 to update said character.

[Claim 11] Said detectable object is arranged in the predetermined location in said virtual world. It not being displayed on a screen, but the possible hiding item of discovering, when a player makes said character investigate the location being included, and updating said character If it is judged that said detectable object exists within the maximum detection distance from said character while said character masters predetermined capacity or the predetermined item is used A video game program including updating said character in the image which turns to said direction of a hidden item according to claim 8.

[Claim 12] The candidate for updating of said character is the video game program of any one publication of claim 8-11 characterized by being a face part at least.

[Claim 13] It is a video game program including making into said character actuation beforehand defined according to the distance of said detectable object and said character according to claim 8 to update said character, when it is judged that said detectable object exists within the maximum detection distance from said character.

[Claim 14] It is a video game program including making into said character actuation beforehand defined according to the class of said detectable object according to claim 8 to update said character, when it is judged that said detectable object exists within the maximum detection distance from said character.

[Claim 15] The record medium which recorded the program of the possible video game of a player operating the character of a virtual world and in which computer read is possible, The computer which reads and executes said program from said record medium, It is video game equipment equipped with the indicating equipment which is connected to said computer and displays said virtual world. Said computer It judges whether by reading said program in said record medium, a detectable predetermined object exists within the predetermined maximum detection distance from said character. Video game equipment which performs what said character displayed on said indicating equipment will be updated for in the image which turns to said detectable direction of an object if it is judged that said detectable object exists within the maximum detection distance from said character.

[Claim 16] It is the control approach of the video game equipment which displays the screen of

the possible video game of having a computer and a display and a player operating the character of a virtual world through said computer on said display. If it judges whether a detectable predetermined object exists within the predetermined maximum detection distance from said character and it is judged that said detectable object exists within the maximum detection distance from said character The video game device control approach of making said computer performing what said character displayed on said indicating equipment is updated for in the image which turns to said detectable direction of an object.

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the possible video game of a player operating the character of a virtual world especially about the record medium which recorded the program and its program of video game equipment, its control approach, and video game and in which computer read is possible.

[0002]

[Description of the Prior Art] In video game, such as RPG (Role Playing Game: role playing game), the virtual world by which the natural object and the artifact have been arranged is displayed on a display, and a player can move a self character now in the screen of a display in many cases. A player can investigate the object by making a player character approach the object displayed on a screen. For example, a player moves a character to the inlet port of the building to investigate the inside of the building in a screen. Usually, if a character is moved to the inlet port of a building, a screen will be updated, and the image showing the interior of a building is displayed.

[0003]

[Problem(s) to be Solved by the Invention] The existence cannot be known even if only the object as which a player is displayed in a screen is located in the location where the existence could not be known but it separated from the object outside a screen slightly from a screen. For example, when Screen 61 shown in drawing 8 is displayed, a player cannot discover the building object 310 from which only the amount of one character has shifted [ periphery / of Screen 61 ].

[0004] However, the player which the player character 300 which lives in a virtual world considers that it is unnatural not to notice the building 310 which has separated slightly from the screen also exists. Such a player senses the dissatisfaction for it originating in the gap of the consciousness range which the player character should have, and the consciousness range which a player actually has, and the object in a virtual world not being discovered.

[0005] Then, this invention gives a commonsense visual field to a player character, and makes it a technical problem to offer the record medium which recorded the program and its program of the video game equipment which a player makes easy to discover the object in the virtual world which is not displayed on a screen, its control approach, and video game and in which computer read is possible.

[0006]

[Means for Solving the Problem] This invention offers the possible video game of a player operating the character of the virtual world displayed on a display through a computer. If a

computer judges whether a detectable predetermined object exists within the predetermined maximum detection distance from a character and is judged that a detectable object exists within the maximum detection distance from a character, it will update the character displayed on an indicating equipment in the image which turns to the detectable direction of an object.

[0007] Since a character turns to the direction of an object which was set up so that it might not display on the object or screen which are located outside a screen and where it hides and an object etc. is not displayed on a screen according to this invention, a player can guess the location of an object from the direction which the character has turned to.

[0008]

[Embodiment of the Invention] Hereafter, it explains, referring to the drawing of attachment of the operation gestalt of this invention. Drawing 1 is the block diagram showing the whole video game equipment configuration concerning this operation gestalt. Video game equipment 1 is equipped with the input device (for example, keypad) 3 and output unit (for example, television set) 6 which were connected to the control unit 2 which controls video game equipment 1, and the control unit 2 as an example. Game equipment 1 is further equipped with the memory card 5 which saves game data, such as progress data, configuration data, etc. of a game.

[0009] A control unit 2 is one computer. In this example, a control unit 2 is a game machine for home use. However, it is not necessarily limited to this.

[0010] As shown in drawing 1, the control unit 2 is equipped with the bus 19 which connects the main control section 11, RAM (Random Access Memory; random access memory)12, the interface section 13, the sound processing section 14, the graphic operation section 15, CD-ROM drive 16, a communication interface 17, HDD (Hard Disk Drive; hard disk drive)18, and these components mutually as an example of the configuration. Moreover, CD-ROM drive 16 is constituted so that CD-ROM (Compact Disc Read Only Memory)4 which is the record medium which stored the program for realizing processing about the game mentioned later, image data, sound data, etc. can be carried enabling free attachment and detachment.

[0011] The main control section 11 is a circuit equipped with CPU (Central Processing Unit; arithmetic and program control), ROM (Read Only Memory; read only memory), etc., and CPU controls each part of a control unit 2 according to the program stored in RAM12 (it is ROM depending on the case). Basic programs, such as a boot program of a control device 2 and OS (Operating System), are memorized by ROM. Moreover, this main control section 11 is equipped with the oscillator or the timer counter (not shown [ both ]), generates a clock signal based on the timing signal outputted for every predetermined period from an oscillator, and clocks time amount by carrying out counting of this clock signal by the timer counter.

[0012] RAM12 is main storage used in order that CPU of the main control section 11 may perform a program, and the data which are needed for the program which CPU performs, or its activation are stored. RAM12 is used also as a work area at the time of program execution.

[0013] The interface section 13 is constituted so that an input unit 3 and a memory card 5 can be connected enabling free attachment and detachment. This interface section 13 controls the data transfer between each part (mainly main control section 11) and the input device 3 which were connected to the bus 19, or a memory card 5.

[0014] The sound processing section 14 is a circuit which performs processing for reproducing voice data, such as BGM (Back Ground Music) of a game, and a sound effect. This sound processing section 14 generates a sound signal based on the data memorized by RAM12 according to the instruction from the main control section 11, and supplies this to an output unit 6.



[0015] The graphic operation section 15 is equipped with a frame buffer (not shown), and draws the image according to the instruction from the main control section 11 on a frame buffer. Moreover, the graphic operation section 15 adds a predetermined synchronizing signal to the image data drawn by the frame buffer, generates a video signal, and supplies this to an output unit 6.

[0016] CD-ROM drive 16 is a reader which reads the data stored in CD-ROM4 which is a record medium. Game equipment 1 realizes control about the game mentioned later by performing control according to the game program recorded on CD-ROM4 by the control unit 2.

[0017] A communication interface 17 is a circuit which performs communications control at the time of performing the various data exchanges among the other equipments on a network 100, and is connected to a network 100 through a communication line 99 if needed. A communication interface 17 controls transfer of the information between a control device 2 and a communication network 100 (a program and data). The game program and data which were downloaded from the external communication network 100 through the communication interface 17 and the communication line 99 are storable in HDD18.

[0018] HDD18 is an auxiliary storage unit used in order that CPU of the main control section 11 may perform a program. Various data and programs, such as information downloaded using the communication interface 17 and information read in CD-ROM4, are storable in HDD18.

[0019] CD-ROM4 stores game software. The game program and the required data which make processing required for activation of a computer game perform in the main control section are contained in this game software. The program which makes game equipment 1 perform the approach concerning this operation gestalt is included in this game program. The game software stored in CD-ROM4 can be read by operating CD-ROM drive 16.

[0020] In addition, game equipment 1 can also memorize game software to HDD18. This game software may be pre-installed in HDD18, and it can install from CD-ROM4, or it can also be downloaded from the other equipments on a communication network 100 as mentioned above.

[0021] The input unit 3 is equipped with two or more actuation implements operated by the player in order to input various directions about a game into a control unit 2. An input unit 3 will send the command signal according to the actuation implement to a control unit 2 through the interface section 13, if an actuation implement is operated. With this operation gestalt, the keypad 30 which is generally attached in a home video game machine as an example is prepared as an input unit 3.

[0022] Drawing 2 (a) is the top view showing a keypad 30, and (b) is the rear view showing a keypad 30. As shown in drawing 2 (a), the cross-joint key 31 for inputting direction directions, the actuation key (for example, the O carbon button 32, the \*\* carbon button 33, the \*\* carbon button 34, the x carbon button 35, a start button 36, a select button 42) for inputting various kinds of commands into a control device 2, etc. are prepared in the keypad 30 as an actuation implement. Moreover, joy sticks 37a and 37b are also formed in the keypad 30 as an actuation implement. As shown in drawing 2 (b), two or more actuation keys (R1 carbon button 38, R2 carbon button 39, L1 carbon button 40, L2 carbon button 41) are prepared also in the tooth back of a keypad as an actuation implement. Furthermore, the keypad 30 has the vibration (vibration) function. That is, the motor can be built in, a motor can operate by receiving a predetermined control signal from a control unit 2, and, on the whole, a keypad 30 can vibrate a keypad 30 now.

[0023] A memory card 5 is an auxiliary storage unit which consists of flash memories, is controlled by the control device 2, and memorizes game data. The main control section 11 controls the writing of the data to a memory card 5, and the read in of the data from a memory

card 5 through the interface section 13.

[0024] An output unit 6 displays a game image based on the video signal and sound signal from a control unit 2, and outputs voice. With this operation gestalt, the television (TV) set is prepared as an output unit 6. This television set is equipped with the display screen 61 for image display, and the loudspeaker 62 for voice outputs. A television set answers a sound signal from the sound processing section 14, and outputs voice from a loudspeaker 62 while it answers a video signal from the graphic operation section 15 and displays an image on the display screen 61. Therefore, a television set functions as both sides of a display and an audio output device.

[0025] The main control section 11 controls actuation of a control unit 2 by basic software and CD-ROM drive 16 which are stored in ROM based on the game software which is read from CD-ROM4 and stored in RAM12. For example, the main control section 11 reads graphical data from CD-ROM4, transmits it to the graphic operation section 15, and directs generation of an image in the graphic operation section 15. Answering these directions, the graphic operation section 15 generates a video signal using graphical data. This video signal is sent to an output unit 6. Thereby, an image is displayed on the display screen of an output unit 6.

[0026] The video game which advances when a player operates a player character in a virtual world is expressed as this operation gestalt on Screen 61 of a display 6. Various objects, such as a natural object, an artifact, an item, and a non player character, are arranged at this virtual world.

[0027] The description of this operation gestalt is that the player character displayed on Screen 61 turns a face to the object, when it has the visual field with a commonsense player character and a predetermined object is within the distance in which a predetermined check by looking is possible from a player character in a virtual world. Below, this focus is explained, referring to drawing 3 and drawing 4.

[0028] Drawing 3 shows an example of Screen 61 showing a virtual world. A player can move the player character 200 in Screen 61 by operating the cross-joint key 31, joy stick 37a, or 37b of a keypad 30. In drawing 3, the player character 200 is moving in the direction shown by the arrow head 202.

[0029] As shown in drawing 3, the building object 210 is arranged outside the field displayed on Screen 61 in this virtual world. Although the body of the player character 200 has turned to the migration direction shown by the arrow head 202, the face of the player character 200 is suitable in the direction of the building object 210 outside a screen, as shown by the broken line 204. Thus, since a face turns to the object 210 outside a screen independently of the bodily sense, the player character 200 can tell a player about existence of an object 210, without barring migration actuation of the player character 200 by the player.

[0030] With this operation gestalt, the maximum distance between the object to which the player character 200 turns a face, and the possible player character 200 of the player character 200 turning a face to an object and an object is defined beforehand. Below, the maximum distance to which a detectable object, a call, and the player character 200 can react to a detectable object the object set up so that the player character 200 might turn a face will be called the maximum detection distance. The object set up as a detectable object is usually an object with which a certain event was related. The maximum detection distance can be considered to be the maximum distance which can check the player character 200 by looking in a virtual world.

[0031] The building object 210 is beforehand set up as a detectable object, and is located within the maximum detection distance from the player character 200. With this operation gestalt, the distance which corresponds the twice of the dip of Screen 61 is set up as a maximum detection

distance. When two or more detectable objects located within the maximum detection distance from the player character 200 exist so that it may mention later, the face of the player character 200 turns to the near detectable object of distance most.

[0032] Drawing 4 is a flow chart which shows the processing which video game equipment 1 performs, in order to turn the face of the player character 200 to an object. This processing is carried out when a control unit 2 performs the video game program memorized by CD-ROM4, respectively. In addition, although a game program and required data are read from CD-ROM4 one by one according to the advance situation of processing and it is transmitted to RAM12, in the following explanation, the detailed explanation about read-out from CD-ROM4, the transfer to RAM12, etc. may be omitted.

[0033] First, it is judged whether a detectable object exists within the maximum detection distance from a player character (step S102). This judgment is made by searching the detectable object located within the maximum detection distance from a player character with reference to the object arrangement data which specify arrangement of the detectable object in a virtual world. In addition, in case object arrangement data display a virtual world on Screen 61, they are stored in RAM12 from CD-ROM4.

[0034] When it is judged that a detectable object exists within the maximum detection distance from a player character (step S102: YES root), the near detectable object of distance is most specified from a player character (step S104). This processing is performed by referring to the location data of the player character stored in RAM12, and a detectable object.

[0035] Then, the image of a player character is updated according to the direction in which the specified detectable object is located (step S106). The player character image after updating has the face of the sense according to the direction in which the detectable object specified from the player character as what has the nearest distance is located.

[0036] Two or more images which have the body of mutually different sense are prepared for the player character, and these images are matched and displayed in the migration direction of a player character. in addition, with this operation gestalt, even when the bodily sense is the same, two or more character images with which the sense of a face differs mutually are also prepared. The sense of these faces is beforehand matched with the predetermined include-angle range, respectively, and when a character image is displayed, it seems to it that the player character has turned the face in the direction of the object located in predetermined include-angle within the limits substantially. The character image which has the body of the sense corresponding to the migration direction of a player character and the face of the sense corresponding to the include-angle range in which a detectable object is located is expressed as step S106.

[0037] Processing of drawing 4 is periodically performed, when the virtual world is displayed. Therefore, change of the include-angle range in which a detectable object is located by migration of a player character changes the sense of the face of a character image according to this. Of course, while making the sense of a face update, the sense of an eye may also be turned in the detectable direction of an object.

[0038] Thus, with this operation gestalt, since a player character turns a face in the direction of a detectable object, a player becomes easy to discover the object outside a screen, can hold down waste of time amount, and can raise the effectiveness of a game play.

[0039] The wall seems to have interrupted the look of a player character in the dungeon etc., although the detectable object 210 is arranged from the player character 200 in drawing 3 in the good location of a prospect. When the look of a player character is interrupted by other objects and does not pass by this operation gestalt to a detectable object, a player character does not turn

a face in the direction of the object. If a player character moves and a look comes to pass to a detectable object, the image of the player character which turned the face in the direction of a detectable object will be displayed. Thereby, a player character comes to have a visual field near much more actually, and can raise the reality of a game.

[0040] Moreover, with this operation gestalt, if the capacity for a player character to be called "item sensing" is learned, a player character will come to turn a face also in the direction of the hiding item which is not displayed on a screen. This hiding item is arranged in the predetermined location in a virtual world, is not usually displayed on a screen, but when a player makes a player character investigate that location, it can be discovered. With this operation gestalt, if a player character learns "item sensing" capacity, it will hide in a detectable object and an item will be added. This comes to turn a face in the direction of a hidden item in which a player character exists within the maximum detection distance.

[0041] Drawing 5 shows the player character 200 which has turned the face to the hidden item. Although the hidden item is arranged in the location shown with the sign 220 in Screen 61, it is not displayed in Screen 61. The player character 200 turns a face to the arrangement location 200 of such a hiding item. Thereby, in spite of being arranged in the viewing area of Screen 61 in the virtual world, a player can know existence of the hiding object which is not displayed on Screen 61, and the location can be guessed from the sense of the face of a character.

[0042] A player can be hidden by investigating the direction to which the character has turned the face, and can discover an object. When the player character which follows, for example, has "item sensing" capacity goes into the room in which the item was hidden, it is not necessary to investigate the furniture of the room etc. one by one, and a hidden item can be discovered. Thereby, the effectiveness of a game play can be raised.

[0043] In addition, a player character turns a face to a hidden item by equipping specific items, such as an "item detection rod", instead of learning "item sensing" capacity.

[0044] As mentioned above, although this invention was concretely explained based on the operation gestalt, various deformation is possible for this invention in the range which is not limited to the above-mentioned operation gestalt and does not deviate from the summary. For example, two or more steps in accordance with the approach concerning this invention can change the sequence in the range which does not deviate from the meaning or the range of this invention.

[0045] In addition to turning a face in the direction of a detectable object, a player character may perform actuation according to the distance of a detectable object and a player character.

Drawing 6 shows the actuation which the player character 200 performs, when only distance with the detectable object 210 near the maximum detection distance is separated from the player character 200. As shown in drawing 6, the player character 200 performs actuation which hangs up a hand on the frons and looks at a long distance, when turning a face in the distantly distant direction of an object 210. Thus, if a player character is made to perform various actuation according to the distance of a player character and a detectable object, a player will become easy to guess the location of a detectable object from the actuation, and discovery of an object will become still easier.

[0046] Moreover, the detectable object to which a player character turns a face may be limited to the object of a specific class. For example, the object only of the objects (a castle, dungeon, etc.) to which only a precious article can advance into the interior to which a player character turns a face may be only a hiding item or an enemy character.

[0047] Moreover, in addition to turning a face in the direction of a detectable object, a player

character may perform actuation according to the class of detectable object. For example, when a detectable object is an enemy character, and turning a face to the enemy character, a player character may shake the body. A player can guess the class of object to which the player character has turned the face, and a player character can be made to take the action according to the class because a player character performs actuation according to the class of detectable object. For example, since it is thought that an enemy character is in a perimeter while the player character is shaking the body, a player can avoid the battle with an enemy character because a player character avoids the direction to which the face is turned and moves a player character.

[0048] Although the above-mentioned operation gestalt explained this invention in connection with home video game equipment, this invention can also be applied to general purpose computers, arcade game machines, etc., such as a personal computer.

[0049] Although the display and the input unit, and the control device have dissociated with the above-mentioned operation gestalt, it is also possible to apply this invention to the video game equipment with which the display and the input unit, and the control device were unified.

[0050] With the above-mentioned operation gestalt, CD-ROM is used as a record medium in which the computer read for recording a game program and data is possible. However, a record medium may not be limited to CD-ROM and may be the magnetic and optical record medium or semiconductor memory of others in which the read of computers, such as DVD (Digital Versatile Disc) or a ROM card, is possible. Furthermore, a program and data for the method beforehand pre-installed in the storage of a game machine or a computer to realize this invention may be offered.

[0051] The program and data for realizing this invention may be downloaded and used for HDD18 by the communication interface 17 shown in drawing 1 from other devices on the network 100 connected through the communication line 99. Moreover, a program and data are recorded on the memory of other devices on a communication line 99, and it is also possible to use this program and data for RAM12 through a communication line 99 if needed, reading them into it one by one.

[0052] The offer gestalt of the program for realizing this invention or data may be offered from other devices on a network 100 as a computer data signal on which the subcarrier was overlapped. For example, a control unit 2 can realize this invention now by receiving the computer data signal which required transmission of a computer data signal of other devices on a communication network 100, and was transmitted to them through the communication line 99 from the communication interface 17, and storing in RAM12.

[0053]

[Effect of the Invention] Since a character turns a face to the object which is not displayed on a screen according to this invention, a player can tend to discover such an object, therefore can hold down waste of time amount, and can play a game efficiently.

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## **(54) VIDEO GAME DEVICE AND RECORDING MEDIUM STORING PROGRAM**

(57)Abstract:

**PROBLEM TO BE SOLVED:** To improve site presence feeling by detecting the distance between a character and a sound source on a display screen by each sound source, and controlling the output volume of the sound source according to the distance.

**SOLUTION:** When a character movement display control part 40 moves and displays a sprite-displayed character corresponding to the player's operation, a character position recognizing part 41 recognizes the character coordinate position on a map at every time. The result is input to a sound control part 43. On the other hand, the coordinate position of every sound source on each map are stored in a sound source position storing part 42. A distance detecting part 44 detects the distance between the character and the sound source according to the character position data input in the sound control part 43 and the sound source position data of a sound source position storing part 42. According to the detected distance, a volume operating part 45 operates the volume of the light source to be output as a volume control signal to a sound processing part. By this arrangement, site presence feeling can be given to a player.

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## CLAIMS

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[Claim 1] Video-game equipment characterized by to have a detection means detect the distance in the display screen of said character and said sound source for every sound source, and the control means which controls the output sound volume of said sound source according to the distance detected with this detection means in the video-game equipment with which the character and at least one sound source by which it is indicated by migration are displayed on a display screen.

[Claim 2] In the video game equipment with which the character and at least one sound source by which it is indicated by migration are displayed on a display screen A far and near relation judging means to judge whether said character and sound source are keeping away or it is approaching, Video game equipment characterized by having a passing speed judging means to judge the relative-displacement rate of said character and sound source, and the control means which controls the height of the output sound of said sound source according to said far and near relation and relative-displacement rate which were judged.

[Claim 3] The record medium which stored the program for realizing the processing which has the 1st step which detects the distance in the display screen of said character and said sound source for every sound source in the record medium which stored the program as which the character and at least one sound source by which it is indicated by migration are displayed on the display screen, and the 2nd step which control the output sound volume of said sound source according to the distance with which it was detected with this detection means.

[Claim 4] The record medium which stored the program for realizing the processing which has the 1st step which judges the far and near relation and the relative-displacement rate of said character and sound source, and the 2nd step which control the height of the output sound of said sound source according to said judged far and near relation and a relative-displacement rate in the record medium which stored the program as which the character and at least one sound source by which it is indicated by migration are displayed on the display screen.

## [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the video game which realized the sound effect with presence.

[0002]

[Description of the Prior Art] In the conventional role playing game, the adventure game, the simulation game, etc., music was beforehand set up for every scene like BGM of inside of a shop by the scene of one BGM (background music) and inside of a shop in the scene of one town.

[0003] Moreover, in the screen to which the character is moving the inside of a town map, when the sound source of a bar, a fountain, a bird, etc. exists on a town map, as the sound (even the music which is sounding at the bar, the sound of a fountain, and that of a bird are a shearing etc.) of the sound source currently displayed as BGM on others is generated, there is also a game which raised presence.

[0004] However, in the conventional game, while a character moved in a various map top, such as a town, a village, a castle, and a cave, the sound volume and height of various sound sources which exist on a map were immobilization beforehand regardless of the motion of the character.

[0005]

[Problem(s) to be Solved by the Invention] Thus, in the conventional game, regardless of a motion of the character, since the sound volume and height of various sound sources which exist on a map were immobilization beforehand, the problem of being scarce is in depth perception and a sense of reality.

[0006] That is, by the conventional technique, since the sound effect did not follow to remarkable three-dimension-izing of a game screen, the player could not have a touch of reality to the game, but the problem that presence could not be obtained had produced it.

[0007] This invention was made in view of such the actual condition, and aims at offering the record medium which stored the video game equipment and the program from which presence sufficient by changing the sound volume and height of the sound generated from the sound source displayed on a screen to compensate for migration of a character for a player was obtained.

[0008]

[Means for Solving the Problem and its Function and Effect] In invention corresponding to claim 1, the character and at least one sound source by which it is indicated by migration are characterized by to have a detection means detect the distance in the display screen of said character and said sound source for every sound source, and the control means which controls the output sound volume of said sound source according to the distance detected with this detection means in the video-game equipment displayed on a display screen.

[0009] In invention of this claim 1, since the sound volume (volume) which the distance of a character and a sound source is found for every sound source, and is generated from a sound source according to this distance changes, depth perception is born to a sound and a player can obtain presence during game advance.

[0010] In the video game equipment with which the character and at least one sound source by which it is indicated by migration are displayed on a display screen in invention corresponding to claim 2 A far and near relation judging means to judge the far and near relation of said character and sound source, It is characterized by having a passing speed judging means to judge the relative-displacement rate of said character and sound source, and the control means which controls the height of the output sound of said sound source according to said far and near relation and relative-displacement rate which were judged.

[0011] a judgment is judged for the relative-displacement rate of the far and near relation (or [ that the character and a sound source are keeping away relatively ] -- or is it approaching?) between a character and a sound source, and a character and a sound source, and the height (frequency) of the output sound of a sound source is controlled by invention of this claim 2 to realize the Doppler effect according to the far and near relation and the relative-displacement rate which were these-judged. Thus, in this invention, since he is trying to make the Doppler effect reflect in a sound, a player can obtain sufficient presence by under game advance.



[0012] In invention corresponding to claim 3, it is made the processing which has the 1st step which detects the distance in the display screen of said character and said sound source for every sound source in the record medium which stored the program as which the character and at least one sound source by which it is indicated by migration are displayed on the display screen, and the 2nd step which control the output sound volume of said sound source according to the distance with which it was detected with this detection means realizing.

[0013] As a record medium, various portable record media, such as CD-ROM, a game cartridge, a floppy disk, a magnetic disk, and a magneto-optic disk, can be used.

[0014] In invention of this claim 3, since the sound volume which the distance of a character and a sound source is found for every sound source, and is generated from a sound source according to this distance changes, depth perception is born to a sound and a player can obtain presence during game advance.

[0015] In the record medium which stored the program as which the character and at least one sound source by which a migration indication of the invention corresponding to claim 4 is given are displayed on the display screen It is made to realize processing which has the 1st step which judges the far and near relation and the relative-displacement rate of said character and sound source, and the 2nd step which controls the height of the output sound of said sound source according to said judged far and near relation and a relative-displacement rate.

[0016] In invention of this claim 4, since he is trying to make the Doppler effect reflect in the sound generated from a sound source, a player can obtain sufficient presence by under game advance.

[0017]

[Embodiment of the Invention] The operation gestalt of this invention is explained to a detail according to an accompanying drawing below.

[0018] Drawing 2 shows the system configuration for this video game, and this system consists of television receivers 3 which are connected to (it not illustrating) with CD-ROM, and the body 1 of a game machine with which the game programs for this VC creation are remembered to be the body 1 of a game machine called \*\*\*\*\* PlayStation, and the control pad 2 as an operating set connected to this body 1 of a game machine free [ attachment and detachment ], and reproduce the video screen and the audio output for a game.

[0019] The end connections 4A and 4B of the control pad 2 and the loading openings 5A and 5B of the memory card for data save are formed in the front face 1 of the body of a game machine. Moreover, the top face of the body 1 of a game machine is equipped with the lid 6 of a CD-ROM drive, the open/close switch 7 of a lid 6, the power button 8, and the reset switch 9.

[0020] The control pad 2 is equipped with the O carbon button 11, the x carbon button 12, the \*\* carbon button 13, the \*\* carbon button 14, the migration lever (cross-joint lever) 15, the start button 16, the select button 17, L1/L2 carbon button 18, and R1/R2 carbon button 19.

[0021] Drawing 3 shows the rough internal configuration of the body of a game machine, and CPU21 which controls the whole actuation of video game to a system bus 20, DRAM22 which functions as work-piece memory, ROM23 the boot program was remembered to be, the animation processing section 24, the speech processing section 25, the CD-ROM decoder 26, etc. are connected.

[0022] In the animation processing section 24, processing of the dynamic image read from CD-ROM28 through CD-ROM drive 27 is performed, and the image data obtained as a result is outputted to VDAC29. In VDAC29, elongation processing and D/A transform processing of image data are performed, and the acquired picture signal is outputted as an RGB code. In the

NTSC encoder 30, the inputted RGB code is changed and outputted to the video signal of NTSC system.

[0023] In the CD-ROM decoder 26, while decoding the stored data of CD-ROM28 and sending out the obtained image data on a system bus 20, the decoded voice data is sent out to the speech processing section 25. In the speech processing section 25, the decoded voice data is decrypted and it outputs to DAC31. In DAC31, voice data is changed into an analog signal and it outputs as an audio output.

[0024] Moreover, the control pad 2 and a memory card (not shown) are connected through the serial I/O interface 32.

[0025] In this case, the video game which combined the element like a tool for VC creation which creates the video clip (it is called Following VC) which consisted of image + music as a game memorized by CD-ROM28, and the adventure game-element which solves an event and gets various materials required for VC creation, equipments, a performer, etc. is assumed.

[0026] That is, this game for VC creation creates the video clip (VC) which consists of a musical piece and an image using the musical piece and image material which were acquired while an adventure game was going on, a player operates the control pad 2, and the game advances the hero in a game (character) by manipulating action.

[0027] In this game, VC is created through the in general following stages.

[0028] (1) A musical piece is offered.

[0029] (2) Collect various kinds of materials.

[0030] (3) Create VC by performing a photography editing task using the collected materials.

[0031] (4) Carry completed VC into an agency.

[0032] (5) If the evaluation more than fixed is obtained, money will be obtained and the following music will be offered.

[0033] this game -- if it is, the map consists of various buildings which exist in maps, such as various towns which exist on a world map and a world map, a village, and a dungeon, these towns, a village, a dungeon, etc., and a hero will move during game advance in these map top.

[0034] Drawing 4 shows an example of the town map used for this game, in this case, a map is the bird's-eye view view seen from slant, and is expressed using perspective, a polygon indication of a bar 52 or the fountain 51 is given, and a sprite indication of people (not shown) and the hero 50 of a town is given.

[0035] In this case, migration of a hero 50 can be performed using the cross-joint lever 15 of the control pad 2, and a hero can be moved in the eight directions of the right, the left, the upper right, the lower right, the upper left, and the lower left a top and the bottom by actuation of the cross-joint lever 15. In the move mode, it usually has the two modes of the move mode (a hero walks) with the high-speed move mode (a hero runs). In such a town map that will become the high-speed move mode if the cross-joint lever 15 is operated pushing the x carbon button 12, and will usually become the move mode if the cross-joint lever 15 is operated without pushing the x carbon button 12 When a hero 50 is brought close to a fountain 51, it is enlarged [ sound / out of which the water of a fountain 51 comes ], so that the distance A of a hero 50 and a fountain 51 becomes small, because a player operates suitably the cross-joint lever 15 of the control pad 2. Moreover, when a hero 50 is kept away from a fountain 51, there is small the sound out of which the water of a fountain 51 comes, so that the distance A of a hero 50 and a fountain 51 becomes large.

[0036] Furthermore, when a hero 50 is brought close to a bar 52, it is enlarged [ sounds / (the sound which flows from a bar easy sound etc.) / of a bar 52 ], so that the distance B of a hero 50

and a bar 52 becomes small. Moreover, when a hero 50 is kept away from a bar 52, there is small the sound of a bar 52, so that the distance B of a hero 50 and a bar 52 becomes large.

[0037] Thus, the sound volume (volume) of the sound generated from a sound source corresponding to distance with the various sound sources which exist on a map with a hero (character) 50 fluctuates so that a hero 50 can actually be heard.

[0038] Moreover, although the sound volume of the sound out of which the water of a fountain 51 comes becomes large gradually as mentioned above when a hero 50 is brought close to a fountain 51, the frequency (height) of the sound of a fountain 51 is made high with this.

Although the sound volume of the sound out of which the water of a fountain 51 comes becomes small gradually contrary to this as mentioned above when a hero 50 is kept away from a fountain 51, the sound pitch of a fountain 51 is made low with this.

[0039] Moreover, he is trying for the degree of the height of the sound to change with a hero's 50 passing speed in the height of such a sound. That is, the cross-joint lever 15 is operated without pushing the x carbon button 12, and a hero 50 is usually made into the move mode, and while reliance also pushes the x carbon button 12, it is made for the sound of a fountain 51 to become [ the making / operated the cross-joint lever 15 and / into the high-speed move mode /-hero 50 direction ] high more, when bringing a hero 50 close to a fountain 51. In case a hero 50 is kept away from a fountain 51, it is made similarly for the sound of a fountain 51 to become [ the direction in the case of moving a hero 50 by the high-speed move mode rather than the case where a hero 50 is usually moved by the move mode ] low more.

[0040] a hero 50 is kept away to a bar 52 -- it is -- it is -- as well as the above when bringing close, the height of the sound of a bar changes according to a hero's far and near mode and its passing speed.

[0041] thus, the height (frequency) of the output sound of each sound source will be controlled to realize the Doppler effect according to the relative-displacement rate of far and near relation (or [ that the character and a sound source are keeping away relatively ] -- or is it approaching?) with various sound sources, and the character and sound source which exist on a map with a hero 50, and the sound pitch generated from a sound source fluctuates so that a hero 50 can actually be heard.

[0042] Drawing 1 shows the functional block diagram for controlling the frequency (height) of this sound volume and a sound.

[0043] In drawing 1, the character migration display and control section 40 has the function to indicate the character by which it is indicated by sprite by migration on the map outside a building, in a building, etc. corresponding to actuation of a player. The character location recognition section 41 recognizes the coordinate location on each [ of this character by which it is indicated by migration ] map at the time, and inputs the this recognized coordinate location into the sound control section 43.

[0044] The sound-source position-memory section 42 memorizes beforehand the coordinate location of the various sound sources of the fountain and bar which exist on [ various / which is used for the game concerned ] a map for every sound source, and inputs the this memorized coordinate location into the sound control section 43.

[0045] The sound control section 43 consists of the distance detecting element 44, the sound-volume operation part 45, the far and near judgment section 46, the character move mode judging section 47, and a Doppler control section 48.

[0046] The distance detecting element 44 detects the distance of a character and various sound sources based on each coordinate location of each sound source in the map in which the

character of the various maps memorized by the coordinate location and the sound-source position-memory section 42 of a character on the map concerned inputted from the character location recognition section 41 is carrying out the current position.

[0047] The sound-volume operation part 45 calculates the sound volume which each sound source outputs based on the distance for every sound source detected by the distance detecting element 44. That is, for example, the sound volume of each sound source is calculated on the radical of the relation to which the sound volume of a sound source becomes large in proportion to the distance of a character and a sound source. This calculated sound-volume control signal is inputted into the speech processing section 25 shown in drawing 3.

[0048] Far and near judgment section 43c judges the far and near condition over the various sound sources of a character based on the actuation direction of the cross-joint lever 15 of the control pad 2 to be the coordinate location of the character on the map concerned inputted from the character location recognition section 41, and each coordinate location of each sound source in the map concerned memorized by the sound-source position-memory section 42. That is, it judges whether a character is a positive direction approaching a sound source, or it is the negative direction where a character keeps away from a sound source.

[0049] The character move mode judging section 47 judges [ which operates the cross-joint lever 15, without pushing the x carbon button 12 ] whether the passing speed mode of the character is the high-speed move mode which operates the cross-joint lever 15 while pushing the x carbon button 12, or it is usually the move mode.

[0050] The Doppler control section 48 determines the far and near condition judged in the far and near judgment section 46, and the height condition (height of a frequency) of the sound outputted from each sound source based on the move mode of the character judged in the character move mode judging section 47, and outputs them to the speech processing section 25 which shows this determined frequency control signal to drawing 3. Namely, the frequency which a watcher hears in the Doppler control section 48 while a sound source and a watcher are approaching relatively becomes higher than the frequency of a true sound source. The frequency which a watcher hears while a sound source and a watcher are keeping away relatively becomes lower than the frequency of a true sound source. The degree of the height of the frequency changes the height of a sound source, in case the character is migration so that the Doppler effect of becoming so large that the relative velocity of a sound source and a watcher becoming large may be realized.

[0051] Drawing 5 is the fountain 51 shown in drawing 4, and a flow chart which controls sound volume of a bar 52.

[0052] First, when the town screen of drawing 4 is displayed, in the distance detecting element 44, the distance A and B of a character 50, and a fountain 51 and a bar 52 is calculated serially (step 100).

[0053] In the sound-volume operation part 45, the sound volume corresponding to the these-calculated distance A and B is calculated, respectively (step 101 a, b), and it outputs to the speech processing section 25 which shows the sound-volume control signal which shows the these-calculated sound volume to drawing 3 (step 102 a, b).

[0054] As it follows, for example, is shown in drawing 4, compared with the distance A from a character 50 to a fountain 51, BGM of a bar 52 can be enlarged compared with the sound out of which the water of a fountain 51 comes by above-mentioned processing being performed when near, thereby, depth perception is born to a sound and, as for a player, the distance B from a character 50 to a bar 52 can obtain strong presence by under game advance.

[0055] Drawing 6 is a flow chart which shows the control for realizing the Doppler effect about a fountain sound in the town screen of drawing 4.

[0056] First, when the town screen of drawing 4 is displayed, in the far and near judgment section 46, it is judged whether the character 50 has stopped or it is under migration (step 200).

[0057] When judged with the character 50 having stopped, a frequency control signal is not outputted from the Doppler control section 48, and change is not generated in the sound out of which the water of a fountain 51 comes by this, and the frequency of BGM of a bar 52 (step 210).

[0058] On the other hand, when judged with the character 50 moving, the Doppler control section 48 judges whether this migration is approaching to the fountain 51, or it is keeping away based on the judgment result of the far and near judgment section 46 (step 220).

[0059] the case where it judges that the character 50 is approaching the fountain 51 -- the Doppler control section 48 -- further -- the output of the character move mode judging section 47 -- being based -- the move mode of a character 50 -- the high-speed move mode -- or the move mode is usually judged (step 230), it determines whether to raise whether according to this judgment result, one step of fountain sound pitches is raised, and two step of a certain \*\*\*\*, and the frequency control signal which shows this decision result is outputted to the speech processing section 25 of drawing 3. That is, when the passing speed of the character is a high speed, a fountain sound pitch is raised by two steps (step 240), and when the passing speed of the character is a low speed, a fountain sound pitch is raised by one step (step 230).

[0060] Moreover, when the Doppler control section 48 is the judgment of step 220 and it judges that the character 50 is keeping away from the fountain 51 Or the move mode is usually judged (step 260). said -- the same -- the output of the character move mode judging section 47 -- being based -- the move mode of a character 50 -- the high-speed move mode -- It determines whether to lower whether according to this judgment result, one step of fountain sound pitches is lowered, and two step of a certain \*\*\*\*, and the frequency control signal which shows this decision result is outputted to the speech processing section 25 of drawing 3. That is, when the passing speed of the character is a high speed, a fountain sound pitch is reduced by two steps (step 270), and when the passing speed of the character is a low speed, a fountain sound pitch is reduced by one step (step 280).

[0061] the sound of a bar -- also being related -- this -- the same -- the height of the far and near relation between a character and a bar, and the passing speed of the character -- responding -- the height of the sound of a bar -- one step -- or two steps will be gone up and down.

[0062] Thus, if a character 50 moves in the direction approaching a fountain 51 or a bar 52 It is that processing is performed so that BGM of the sound and bar 52 out of which the water of a fountain 51 comes is made high, and BGM of the sound and bar 52 out of which the water of a fountain 51 comes may be made low, if it moves in the direction in which a character 50 keeps away from a fountain 51 or a bar 52 conversely. The Doppler effect can be made to reflect in a game and a player can obtain presence during game advance.

[0063] In addition, in the above-mentioned operation gestalt, when it can carry out adjustable [ of the passing speed of the character ] more than a three-stage, corresponding to this, what is necessary is just made to have been made to make height control of the sound source by the Doppler effect into two steps corresponding to this, since passing speed of the character was made into two steps, but to perform height control of a sound source on a multistage story. Moreover, the range of the passing speed of a character also becomes very extensive, and in such a case, the relative velocity of the actual passing speed and the actual sound source of the

character is actually calculated, and you may make it reproduce the Doppler effect which has a sense of reality more based on this result of an operation in the case where the character rides on a vehicle in a game, a car racing game, a vehicle simulation game, etc.

[0064] Moreover, in the above-mentioned operation gestalt, although it explains using the thing of immobilization without a sound source's moving, the sound source itself, such as a sound of a train, a sound of a HEL, and a cry of a bird, may move. You may make it change the height of the sound of the sound source which moves also in such a sound source that moves so that the Doppler effect may be realized based on the far and near relation and such relative velocity of the character and a sound source.

[0065] Moreover, in the above-mentioned operation gestalt, although the sound source currently displayed on the present display screen like the character as an object sound source which controls sound volume and a frequency was used, it may be made to make into the controlled system of the above-mentioned sound volume and a frequency the sound source on the map set up when it was near the character which is not displayed in the current position of the character.

[0066] Moreover, with the above-mentioned operation gestalt, although it was made to indicate the character by sprite, it may be made to indicate the character by the polygon.

[0067] Moreover, you may make it apply control of the sound which flows from the sound source by this invention to other game gestalten, i.e., a role playing game, an adventure game, a simulation game, an action game, etc.

[0068] Moreover, although PlayStation was made to realize this invention with the above-mentioned operation gestalt, you may make it use other video game special-purpose machines, and the further usual personal computer may be made to realize this invention.